

## **REMARKS**

Applicants have amended their claims herein to better clarify the invention. Claims 1, 11, and 21, are amended herein to recite providing a first information storage and retrieval system comprising two clusters, wherein a remote I/O bridge interconnects said two clusters, and wherein each cluster comprises a processor, a cache, a plurality of host adapters, a plurality of device adapters, a plurality of disk drive arrays each utilizing a Redundant Array of Independent Disks protocol. Support can be found in the Specification on Page 13 at Line 16 through Page 14 at Line 20, and in FIG. 1 at elements 101A (first cluster), 101B (second cluster), 101 (plurality of host adapters), 111 (plurality of host adapters), 132 (processor), 142 (processor), 134 (cache), 144 (cache), 155 (remote I/O bridge), 165 (remote I/O bridge), 161 (plurality of device adapters), 171 (plurality of device adapters), 180 (disk drive array), and 190 (disk drive array).

Claims 1, 11, and 21, are further amended herein to recite a second information storage and retrieval system comprising two clusters, wherein a remote I/O bridge interconnects said two clusters, and wherein each cluster comprises a processor, a cache, a plurality of host adapters, a plurality of device adapters, a plurality of disk drive arrays each utilizing a Redundant Array of Independent Disks protocol. Support can be found in the Specification on Page 13 at Line 16 through Page 14 at Line 20, and in FIG. 1 at elements 101A (first cluster), 101B (second cluster), 101 (plurality of host adapters), 111 (plurality of host adapters), 132 (processor), 142 (processor), 134 (cache), 144 (cache), 155 (remote I/O bridge), 165 (remote I/O bridge), 161 (plurality of device adapters), 171 (plurality of device adapters), 180 (disk drive array), and 190 (disk drive array).

Claims 1, 11, and 21, are further amended herein to recite a storage area network ("SAN"), wherein the SAN is in communication with a first host computer via a first plurality of communication links, in communication with a second host computer via a second plurality of communication links, in communication with a third host computer via a third plurality of communication links, in communication with said first information storage and retrieval system via a fourth plurality of communication links, and in communication with said second information storage and retrieval system via a fifth plurality of communication links. Support can be found in the Specification on Page 4 at Lines 11-15, on Page 7 at Line 14 through Page 8 at Line 19, on Page 9 at Line 14 through Page 15 at Line 3, and in FIG. 2A at elements 210 (first host computer), 219 (first plurality of communication links), 220 (second host computer), 229 (second plurality of communication links), 230 (third host computer), 239 (third plurality of communication links), 240 (SAN), 250 (first information storage and retrieval system), 270 (fourth plurality of communication links), 260 (second information storage and retrieval system), and 280 (fifth plurality of communication links).

No new matter has been entered. Reexamination and reconsideration of the application, as amended, is respectfully requested.

The Figures stand objected to for failure to recite all the elements of the claims. FIG. 3 is amended herein to recite all the elements of claims 1, 11, and 21, as amended herein.

Claims 1-4, 11-14, and 21-24, stand rejected under 35 U.S.C. 103(a) as being unpatentable over NPL entitled "HP-UX 10.0 Logical Volume Manager White Paper" (Hewlett-Packard), and in view of Padmanabhan et al. (U.S. Pub. No. 2003/0188188).

Claims 5-7, 15-17, and 25-27, stand rejected under 35 U.S.C. 103(a) as being

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unpatentable over the combination of Hewlett-Packard and Padmanabhan et al., and further in view of Atkin (U.S. Pat. No. 6,145, 066).

Claims 8, 18, and 28, stand rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hewlett-Packard and Padmanabhan et al., and further in view of Tremain (U.S. Pub. No. 2002/0069369).

Claims 9-10, 19-20, and 29-30, stand rejected under 35 U.S.C. 103(a) over the combination of Hewlett-Packard and Padmanabhan et al., and further in view of Mokryn et al. (U.S. Pat. No. 6,735,636).

Neither Hewlett-Packard, nor Padmanabhan et al., singly or in combination, teach use of a first information storage and retrieval system and a second information storage and retrieval system, wherein both the first and second information storage and retrieval system comprises two clusters, wherein a remote I/O bridge interconnects the two clusters, and wherein each cluster comprises a processor, a cache, a plurality of host adapters, a plurality of device adapters in communication with a plurality of disk drive arrays each utilizing a Redundant Array of Independent Disks protocol, and a plurality of first logical volumes, as recited by claims 1, 11, and 21, as amended herein. In addition, neither Hewlett-Packard, nor Padmanabhan et al., singly or in combination, teach a storage area network ("SAN"), wherein the SAN is in communication with a first host computer via a first plurality of communication links, in communication with a second host computer via a second plurality of communication links, in communication with a third host computer via a third plurality of communication links, in communication with a first information storage and retrieval system via a fourth plurality of communication links, and in communication with a second information storage and

retrieval system via a fifth plurality of communication links, as recited by claims 1, 11, and 21, as amended herein.

Moreover, neither Hewlett-Packard, nor Padmanabhan et al., singly or in combination, teach a method, computer readable program code implementing that method, or a computer program product encoding that method, wherein the method, *inter alia*, forms (N) host computer groups, forms (N) logical volume groups, wherein each of a plurality of host computers assigned to an (i)th host computer group is not assigned to any other of (N) host computer groups, and wherein each of the logical volumes assigned to an (i)th logical volume group is not assigned to any other of the (N) logical volume groups, and wherein a host computer assigned to an (i)th host computer group has access rights to logical volumes assigned to an (i)th logical volume group, as recited by claims 1, 11, and 21. Applicants respectfully submit that claims 1, 11, and 21, are patentable over the either the teachings of Nakamura et al. and/or Hewlett-Packard.

Claims 2-4, as amended herein, depend, directly or indirectly, from claim 1, as amended herein. Under 35 U.S.C. § 112, fourth paragraph, “a claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.” Because neither Nakamura et al., nor Hewlett-Packard, teach all the elements of claims 2-4, Applicants respectfully submit that claims 2-4, as amended herein, are patentable over the teachings of Nakamura et al., and over the teachings of Hewlett-Packard.

Claims 12-14, as amended herein, depend, directly or indirectly, from claim 11, as amended herein. Under 35 U.S.C. § 112, fourth paragraph, “a claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.”

Because neither Nakamura et al., nor Hewlett-Packard, teach all the elements of claims 2-4, Applicants respectfully submit that claims 12-14, as amended herein, are patentable over the teachings of Nakamura et al., and over the teachings of Hewlett-Packard.

Claims 22-24, as amended herein, depend, directly or indirectly, from claim 21, as amended herein. Under 35 U.S.C. § 112, fourth paragraph, "a claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers."

Because neither Nakamura et al., nor Hewlett-Packard, teach all the elements of claims 2-4, Applicants respectfully submit that claims 22-24, as amended herein, are patentable over the teachings of Nakamura et al., and over the teachings of Hewlett-Packard.

Atkin, Tremain, or Mokryn et al., fail to cure the deficiencies of Nakamura et al. and Hewlett-Packard. Neither Hewlett-Packard, nor Padmanabhan et al., nor Atkin, nor Tremain, nor Mokryn et al, singly or in combination, teach use of a first information storage and retrieval system and a second information storage and retrieval system, wherein both the first and second information storage and retrieval system comprises two clusters, wherein a remote I/O bridge interconnects the two clusters, and wherein each cluster comprises a processor, a cache, a plurality of host adapters, a plurality of device adapters in communication with a plurality of disk drive arrays each utilizing a Redundant Array of Independent Disks protocol, and a plurality of first logical volumes, as recited by claims 5-10, 15-20, and 25-30, as amended herein.

In addition, neither Hewlett-Packard, nor Padmanabhan et al., nor Atkin, nor Tremain, nor Mokryn et al, singly or in combination, teach a storage area network ("SAN"), wherein the SAN is in communication with a first host computer via a first plurality of communication

links, in communication with a second host computer via a second plurality of communication links, in communication with a third host computer via a third plurality of communication links, in communication with a first information storage and retrieval system via a fourth plurality of communication links, and in communication with a second information storage and retrieval system via a fifth plurality of communication links, as recited by claims 5-10, 15-20, and 25-30, as amended herein. Moreover, neither Hewlett-Packard, nor Padmanabhan et al., nor Atkin, nor Tremain, nor Mokry et al, singly or in combination, teach a method, computer readable program code implementing that method, or a computer program product encoding that method, wherein the method, *inter alia*, forms (N) host computer groups, forms (N) logical volume groups, wherein each of a plurality of host computers assigned to an (i)th host computer group is not assigned to any other of (N) host computer groups, and wherein each of the logical volumes assigned to an (i)th logical volume group is not assigned to any other of the (N) logical volume groups, and wherein a host computer assigned to an (i)th host computer group has access rights to logical volumes assigned to an (i)th logical volume group, as recited by claims 5-10, 15-20, and 25-30, as amended herein.

Applicants respectfully submit that claims 5-10, 15-20, and 25-30, as amended herein, are patentable over any combination of Nakamura et al., Hewlett-Packard, Atkin, Tremain, and/or Mokry et al.

Having dealt with all of the outstanding objections and/or rejections of the claims, Applicants submit that the application as amended is in condition for allowance, and an allowance at an early date is respectfully solicited. In the event there are any fee deficiencies or additional fees are payable, please charge them, or credit an overpayment, to our Deposit

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